

CLAIMS

What is claimed is:

1. An additional filter element of a filter apparatus for reducing emissions from a tank venting system, which in use is connected to a main activated carbon filter,

wherein the additional filter element has at least one adsorbent which to achieve a high working capacity, in particular at 42°C, has a high micropore volume and which to retain a residual loading which is possibly present in the micropores has a mesopore volume.

2. An additional filter element as set forth in claim 1 wherein the micropore volume is at least 0.4 cm³/g.

3. An additional filter element as set forth in claim 2 wherein the micropore volume is at least 0.7 cm³/g.

4. An additional filter element as set forth in claim 1 wherein the mesopore volume is at least 0.15 cm³/g.

5. An additional filter element as set forth in claim 4 wherein the mesopore volume is at least 0.25 cm³/g.

6. An additional filter element as set forth in claim 4 wherein the mesopore volume is at a maximum 0.95 cm³/g.

7. An additional filter element as set forth in claim 6 wherein the mesopore volume is at a maximum 0.35 cm³/g.

8. An additional filter element as set forth in claim 1 including a filter body having a honeycomb structure.

9. An additional filter element as set forth in claim 8 wherein the filter body has a rear side and including a small adsorptive additional element at said rear side, said additional filter element being adapted to produce a relatively small pressure drop and having an adsorption capacity at 25°C with an n-butane concentration of between 5 and 50% by volume of greater than 35 g of n-butane per liter.

10. An additional filter element as set forth in claim 9 wherein said additional filter element is including a carrier body comprising a three-dimensional fiber matrix with adsorber particles fixed therein.

11. An additional filter element as set forth in claim 9 wherein said additional filter element is formed by a pressed highly porous activated carbon body in the form of a sieve, said body comprising adsorber particles of a coarse grain fraction and a binding agent joining said adsorber particles together.

12. An additional filter element as set forth in claim 11 including a filter body having a honeycomb structure, and wherein the pressed activated carbon body is fixed to the honeycomb structure filter body by means of said binding agent.

13. An additional filter element as set forth in claim 11 wherein said binding agent is a polyamide binding agent.

14. An additional filter element as set forth in claim 8 and further including a PCM layer enclosing the at least one honeycomb structure filter body and the additional element, said layer involving a phase change in a temperature range of between 35 and 45°C.

15. An additional filter element as set forth in claim 14 wherein said temperature range is between 39°C and 42°C.

16. An additional filter element as set forth in claim 8 wherein said honeycomb filter structure body comprises at least two honeycomb structure filter body portions.

17. In a hydrocarbon fuel tank venting system a filter arrangement for reducing emissions from the tank venting system, including a main activated carbon filter and an additional filter element connected to the main activated carbon filter,

wherein the additional filter element has at least one adsorbent which to achieve a high working capacity, in particular at 42°C has a high micropore volume of at least 0.4 cm³/g, and which to retain a residual loading possibly present in the micropores has a mesopore volume of at least 0.15 cm³/g.

18. A system as set forth in claim 17 wherein the micropore volume is at least 0.7 cm³/g.

19. A system as set forth in claim 17 wherein the mesopore volume is at least 0.25 cm³/g.

20. A system as set forth in claim 17 wherein the mesopore volume is at a maximum 0.95 cm³/g.